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ABSTRACT OF THE DISCLOSURE

A tyre has a piezoelectric flexing element associated with an energy storage device (e.g., a capacitor). The piezoelectric flexure element is mounted in cantilever fashion in a housing so as to be positioned substantially along a plane orthogonal to a radial direction of the tyre and, so that a first end of the piezoelement is restrained by the housing. A loading mass is coupled to the second end of the piezoelectric flexure element. A small gap is formed between the inner walls of the housing and the outer surface of the loading mass in order to allow limited flexure of the piezo-electric element. The housing including the piezoelectric is mounted in a tyre portion in correspondence of a tread area of the tyre, preferably on the inner surface of the tyre. The piezoelectric element flexes under the action of the radial acceleration when the tyre rotates. The loading mass and the gap are chosen to obtain a) small entity oscillations of the flexure element substantially during a complete revolution of the tyre when the tyre rotates at low speed; b) large entity oscillations of the flexure element substantially only during the passage of the tyre portion including the piezoelectric element in the contact patch. Sufficient electrical power for powering an electronic device included within the tyre is obtained, together with a long durability of the piezoelectric element.